

110TH CONGRESS  
1ST SESSION

# S. 1493

To promote innovation and basic research in advanced information and communications technologies that will enhance or facilitate the availability and affordability of advanced communications services to all Americans.

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## IN THE SENATE OF THE UNITED STATES

MAY 24, 2007

Mr. INOUE (for himself and Mr. STEVENS) introduced the following bill; which was read twice and referred to the Committee on Commerce, Science, and Transportation

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## A BILL

To promote innovation and basic research in advanced information and communications technologies that will enhance or facilitate the availability and affordability of advanced communications services to all Americans.

1       *Be it enacted by the Senate and House of Representa-*  
2       *tives of the United States of America in Congress assembled,*

3       **SECTION 1. SHORT TITLE.**

4       This Act may be cited as the “Advanced Information  
5       and Communications Technology Research Act”.

6       **SEC. 2. SPECTRUM-SHARING INNOVATION TESTBED.**

7       (a) SPECTRUM-SHARING PLAN.—Within 1 year after  
8       the date of enactment of this Act, the Federal Commu-

1 nications Commission and the Assistant Secretary of Com-  
2 merce for Communications and Information, in coordina-  
3 tion with other Federal agencies, shall—

4 (1) develop a plan to increase sharing of spec-  
5 trum between Federal and non-Federal government  
6 users; and

7 (2) establish a pilot program for implementa-  
8 tion of the plan.

9 (b) TECHNICAL SPECIFICATIONS.—The Commission  
10 and the Assistant Secretary—

11 (1) shall each identify a segment of spectrum of  
12 equal bandwidth within their respective jurisdiction  
13 for the pilot program that is approximately 10  
14 megaHertz in width for assignment on a shared  
15 basis to Federal and non-Federal government use;  
16 and

17 (2) may take the spectrum for the pilot pro-  
18 gram from bands currently allocated on either an ex-  
19 clusive or shared basis.

20 (c) REPORT.—The Commission and the Assistant  
21 Secretary shall transmit a report to the Senate Committee  
22 on Commerce, Science, and Transportation and the House  
23 of Representatives Committee on Energy and Commerce  
24 2 years after the inception of the pilot program describing

1 the results of the program and suggesting appropriate  
2 procedures for expanding the program as appropriate.

3 **SEC. 3. TELECOMMUNICATIONS INNOVATION ACCELERA-**  
4 **TION.**

5 (a) PROGRAM.—In order to accelerate the pace of in-  
6 novation with respect to telecommunications services (as  
7 defined in section 3(46) of the Communications Act of  
8 1934 (47 U.S.C. 153(46)), equipment, and technology, the  
9 Director of the National Institute of Standards and Tech-  
10 nology shall—

11 (1) establish a program linked to the goals and  
12 objectives of the measurement laboratories, to be  
13 known as the “Telecommunications Standards and  
14 Technology Acceleration Research Program”, to sup-  
15 port and promote innovation in the United States  
16 through high-risk, high-reward telecommunications  
17 research; and

18 (2) set aside, from funds available to the meas-  
19 urement laboratories, an amount equal to not less  
20 than 8 percent of the funds available to the Institute  
21 each fiscal year for such Program.

22 (b) EXTERNAL FUNDING.—The Director shall ensure  
23 that at least 80 percent of the funds available for such  
24 Program shall be used to award competitive, merit-re-  
25 viewed grants, cooperative agreements, or contracts to

1 public or private entities, including businesses and univer-  
2 sities. In selecting entities to receive such assistance, the  
3 Director shall ensure that the project proposed by an enti-  
4 ty has scientific and technical merit and that any resulting  
5 intellectual property shall vest in a United States entity  
6 that can commercialize the technology in a timely manner.  
7 Each external project shall involve at least one small or  
8 medium-sized business and the Director shall give priority  
9 to joint ventures between small or medium-sized busi-  
10 nesses and educational institutions. Any grant shall be for  
11 a period not to exceed 3 years.

12 (c) COMPETITIONS.—The Director shall solicit pro-  
13 posals annually to address areas of national need for high-  
14 risk, high-reward telecommunications research, as identi-  
15 fied by the Director.

16 (d) ANNUAL REPORT.—Each year the Director shall  
17 issue an annual report describing the program's activities,  
18 including include a description of the metrics upon which  
19 grant funding decisions were made in the previous fiscal  
20 year, any proposed changes to those metrics, metrics for  
21 evaluating the success of ongoing and completed grants,  
22 and an evaluation of ongoing and completed grants. The  
23 first annual report shall include best practices for manage-  
24 ment of programs to stimulate high-risk, high-reward tele-  
25 communications research.

1 (e) ADMINISTRATIVE EXPENSES.—No more than 5  
2 percent of the finding available to the program may be  
3 used for administrative expenses.

4 (f) HIGH-RISK, HIGH-REWARD TELECOMMUNI-  
5 CATIONS RESEARCH DEFINED.—In this section, the term  
6 “high-risk, high-reward telecommunications research”  
7 means research that—

8 (1) has the potential for yielding results with  
9 far-ranging or wide-ranging implications;

10 (2) addresses critical national needs related to  
11 measurement standards and technology; and

12 (3) is too novel or spans too diverse a range of  
13 disciplines to fare well in the traditional peer review  
14 process.

15 **SEC. 4. ADVANCED COMMUNICATIONS SERVICES FOR ALL**  
16 **AMERICANS.**

17 The Director of the National Institute of Standards  
18 and Technology shall continue to support research and  
19 support standards development in advanced information  
20 and communications technologies focused on enhancing or  
21 facilitating the availability and affordability of advanced  
22 communications services to all Americans, in order to im-  
23 plement the Institute’s responsibilities under section  
24 2(c)(12) of the National Institute of Standards and Tech-  
25 nology Act (15 U.S.C. 272(c)(12)). The Director shall

1 support intramural research and cooperative research with  
2 institutions of higher education (as defined in section  
3 101(a) of the Higher Education Act of 1965 (20 U.S.C.  
4 1001(a)) and industry.

5 **SEC. 5. ADVANCED INFORMATION AND COMMUNICATIONS**  
6 **TECHNOLOGY RESEARCH.**

7 (a) INFORMATION AND COMMUNICATIONS TECH-  
8 NOLOGY RESEARCH.—The Director of the National  
9 Science Foundation shall establish a program of basic re-  
10 search in advanced information and communications tech-  
11 nologies focused on enhancing or facilitating the avail-  
12 ability and affordability of advanced communications serv-  
13 ices to all Americans. In developing and carrying out the  
14 program, the Director shall consult with the Board estab-  
15 lished under subsection (b).

16 (b) FEDERAL ADVANCED INFORMATION AND COM-  
17 MUNICATIONS TECHNOLOGY RESEARCH BOARD.—There  
18 is established within the National Science Foundation a  
19 Federal Advanced Information and Communications  
20 Technology Board which shall advise the Director of the  
21 National Science Foundation in carrying out the program  
22 authorized by subsection (a). The Board Shall be com-  
23 posed of individuals with expertise in information and  
24 communications technologies, including representatives  
25 from the National Telecommunications and Information

1 Administration, the Federal Communications Commission,  
 2 the National Institute of Standards and Technology, the  
 3 Department of Defense, and representatives from industry  
 4 and educational institutions.

5 (c) GRANT PROGRAM.—The Director, in consultation  
 6 with the Board, shall award grants for basic research into  
 7 advanced information and communications technologies  
 8 that will contribute to enhancing or facilitating the avail-  
 9 ability and affordability of advanced communications serv-  
 10 ices to all Americans. Areas of research to be supported  
 11 through these grants include—

- 12 (1) affordable broadband access, including wire-  
 13 less technologies;
- 14 (2) network security and reliability;
- 15 (3) communications interoperability;
- 16 (4) networking protocols and architectures, in-  
 17 cluding resilience to outages or attacks;
- 18 (5) trusted software;
- 19 (6) privacy;
- 20 (7) nanoelectronics for communications applica-  
 21 tions;
- 22 (8) low-power communications electronics;
- 23 (9) such other related areas as the Director, in  
 24 consultation with the Board, finds appropriate; and

1           (10) implementation of equitable access to na-  
2           tional advanced fiber optic research and educational  
3           networks, including access in noncontiguous States.

4           (d) CENTERS.—The Director shall award multiyear  
5           grants, subject to the availability of appropriations, to in-  
6           stitutions of higher education (as defined in section 101(a)  
7           of the Higher Education Act of 1965 (20 U.S.C. 1001(a)),  
8           nonprofit research institutions affiliated with institutions  
9           of higher education, or consortia thereof to establish mul-  
10          tidisciplinary Centers for Communications Research. The  
11          purpose of the Centers shall be to generate innovative ap-  
12          proaches to problems in communications and information  
13          technology research, including the research areas de-  
14          scribed in subsection (c). Institutions of higher education,  
15          nonprofit research institutions affiliated with institutions  
16          of higher education, or consortia receiving such grants  
17          may partner with 1 or more government laboratories or  
18          for-profit entities, or other institutions of higher education  
19          or nonprofit research institutions.

20          (e) APPLICATIONS.—The Director, in consultation  
21          with the Board, shall establish criteria for the award of  
22          grants under subsections (c) and (d). Grants shall be  
23          awarded under the program on a merit-reviewed competi-  
24          tive basis. The Director shall give priority to grants that



1 offer the potential for revolutionary rather than evolution-  
2 ary breakthroughs.

3 (f) AUTHORIZATION OF APPROPRIATIONS.—There  
4 are authorized to be appropriated to the National Science  
5 Foundation to carry out this section—

- 6 (1) \$40,000,000 for fiscal year 2008;  
7 (2) \$45,000,000 for fiscal year 2009;  
8 (3) \$50,000,000 for fiscal year 2010;  
9 (4) \$55,000,000 for fiscal year 2011; and  
10 (5) \$60,000,000 for fiscal year 2012.

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